

CLAIMS:

1. A decoder system comprising:  
a stream demultiplexer for demultiplexing and  
depacketizing data bytes and for storing the  
demultiplexed and depacketized data bytes in a  
data buffer, said stream demultiplexer further  
generating messages about the stored data and  
their location in the data buffer; and  
a control unit for receiving the generated  
messages and for providing in response thereto  
instructions about the stored data.

2. The decoder system of Claim 1 wherein said  
data bytes are DVD or DVB data bytes.

3. The decoder system of Claim 2 wherein the  
messages generated by the stream demultiplexer  
about the audio and the video components of a DVD  
or DVB data byte are recorded on tags containing  
information about the time stamp of the data and  
their storage location in the data buffer.

4. The decoder system of Claim 3 wherein in  
response to a video tag, said control unit  
generates a task definition packet specifying the  
location of the video data stored in the data  
buffer.

5. The decoder system of Claim 4 wherein in  
response to a task definition packet, a video

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9. The decoder of Claim 8 wherein in a steady  
state and during the normal operating conditions  
of the decoder system, said control unit is  
interrupted only during the occurrence of a  
synchronization signal for audio and video decode  
and presentation.

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10. The decoder of Claim 9 wherein the decoder fetches and decodes data only in response to the existence of a task definition.
11. The decoder of Claim 10 wherein the processing unit comprises a central processing unit.
12. The decoder of Claim 11 further comprising:
  - an audio decoder for retrieving audio data stored in the data buffer and for outputting retrieved audio data; and
  - a video decoder for retrieving video data stored in the data buffer and for outputting retrieved video data.
13. The decoder of Claim 12 wherein the audio decoder detects the occurrence of an audio data frame.
14. The decoder of Claim 13 wherein the processing unit determines the presence of an audio data frame using the timing information associated with the data packet extracted by the demultiplexer and the sync word detected by the audio decoder.
15. The decoder of Claim 14 further comprising a set of data buffers coupled to the processing unit.

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16. The decoder of Claim 15 further comprising:  
an audio output processor coupled to the  
audio output buffer for retrieving the decoded  
audio data and for processing thereof; and  
a video output processor coupled to the video  
frame stores for retrieving the decoded video data  
and for processing thereof.
17. The decoder of Claim 16 further comprising:  
an audio digital-to-analog converter coupled  
to the audio output processor for converting the  
processed digital data to analog data; and  
a video display coupled to the video output  
processor for displaying the processed video data.
18. The decoder of Claim 17 further comprising a  
DVD-DSP interface coupled to the stream  
demultiplexer, the DVD-DSP interface receiving a  
DVD bit stream, and the DVD-DSP interface  
transmitting a DVD byte stream to the stream  
demultiplexer.
19. The decoder of Claim 18 further comprising a  
network port coupled to the stream demultiplexer,  
the network port receiving a DVB bit stream, and  
the network port transmitting a DVB byte stream to  
the stream demultiplexer.
20. The decoder of Claim 19 further comprising:

a timer for maintaining local current time;  
and

a clock generator coupled to the timer for  
maintaining clock references for the decoder.

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21. The decoder of Claim 20 wherein the first  
buffer comprises a message queue for storing  
messages from the stream demultiplexer for the  
central processing unit.

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22. The decoder of Claim 20 wherein the first  
buffer comprises a video buffer, an audio buffer, a  
control data buffer and a queue of the stream  
demultiplexer tags, each stream demultiplexer tag  
comprising a pointer to a video start code in the video  
buffer or to an audio sync frame in the audio buffer or  
to a beginning of a packet in the control data buffer.

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23. The decoder of Claim 21 wherein the decoder  
is implemented as an ASIC.

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24. A method for decoding data bytes comprising:  
demultiplexing, depacketizing, and storing  
the demultiplexed and depacketized data bytes in a  
data buffer;

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generating messages about the stored data  
bytes to a control unit; and

generating instructions about the stored  
data bytes using the control unit.

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25. The method of Claim 24 wherein the demultiplexing and depacketizing data bytes comprise demultiplexing and depacketizing DVD or DVB data bytes.

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26. The method of Claim 25 wherein the act of generating messages about the stored data bytes to a control unit comprises generating tags containing information about the time stamps of the data and their storage location in the data buffer.

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27. The method of Claim 26 further comprising generating a task definition packet in response to the generation of said tag, each task definition packet specifying the location of the stored data.

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28. The method of Claim 27 wherein the act of generating a task definition packet occurs during the intervals between occurrences of a synchronization signal.

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29. The method of Claim 28 further comprising fetching and decoding the stored data in response to the generation of a task definition packet.

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30. The method of Claim 29 wherein the act of fetching and decoding the stored data in response to the generation of a task definition packet occurs during the intervals between occurrences of

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a synchronization signal.

5 31. The method of Claim 30 wherein for each data packet the act of generating a task definition packet occurs one synchronization signal cycle before the act of fetching and decoding, said synchronization cycle defined as the time period between two successive synchronization signals.

10 32. The method of Claim 31 further comprising generating interrupt requests only during the occurrence of a synchronization signal when said decoder is in a steady state and is operating under normal operating conditions.

15 33. The method of Claim 32 wherein the act of generating tags to the control unit involves generating tags to a control unit that is a central processing unit.

20 34. The method of Claim 33 further comprising:  
retrieving the stored audio data and decoding thereof using the audio decoder; and  
retrieving the stored video data and decoding thereof using the video decoder;

25 35. The method of Claim 34 further comprising detecting the sync word of an audio data frame using the audio decoder.

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36. The method of Claim 35 further comprising determining the presentation time of an audio data frame using the time stamp of the data packet and the sync word of the audio data frame.

37. The method of Claim 36 further comprising storing the decoded audio data and the decoded video in a set of data buffer.

10 38. The method of Claim 37 further comprising:  
retrieving the decoded audio data from the set of data buffers for processing and supplying the processed data to an audio digital-to-analog converter; and

15 retrieving the decoded video data from the second buffer for processing and supplying the processed data to a video display.

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